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REVIEW

Nursing Faculty Perspective on Simulation-Based Education: A Literature Review

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Abstract

Background: Simulation-based education (SBE) provides novice and experienced student nurses a platform to learn and practice skills in a simulated environment to be safe and competent nurses. It has become an increasingly popular teaching-learning pedagogy in nursing education, due to its ability to provide a controlled environment. In this nursing faculty plays a vital role. This review aimed to find out the perspectives of nursing faculty members regarding SBE and the barriers and facilitators of SBE.

Methodology: A literature review of data was carried out from Google Scholar, JSTOR, PubMed, and Scopus, in English.

Results: After analyzing different resources, it was reported that simulation is used as a teaching-learning pedagogy in which students can learn in a safe environment. They stated some barriers like SBE being expensive, faculty development opportunities lacking, faculty lack of interest in SBE, and inadequate equipment being available. The facilitators of SBE were students completing pre-simulation activities and collaborating with other institutions.

Conclusion: The study explored faculty barriers and facilitators of SBE. The inclusion and promotion of facilitators as well as easing of barriers will help to support and assist faculty in teaching SBE and enhancing students' learning.

Keywords

Simulation, Simulation-based education, Nursing, Nursing Education



Introduction

Nursing is the most compassionate, caring, noble, and fastest-growing profession in the world. It is emerging constantly creating a pronounced impact in the evolving world of education and health care. It is a very vast field. Most of the emphasis is on producing qualified, competent, critical, and knowledgeable nurses who can serve according to the requirements of the time. For this, advanced and quality education is the most essential key.

Nursing education comprises both classroom learning and clinical practice. Moreover, it is a discipline of practice. The utmost goal of nursing education is to cross the bridge gap between theory and practice. It enables nurses to perform in the patient care areas whatever they learn, in an efficient manner.

Classroom learning or didactic learning mainly focuses on the theoretical content that is taught in a classroom setup through different teaching-learning methodologies, under the supervision of educated and qualified faculty members. It facilitates building up the concepts of the students and enhances their knowledge regarding this profession through the cooperative learning approach.

Another component of nursing is proficiency in skills and practice. This is the most significant part of a nursing student's learning phase that helps them to learn about the practical application of theoretical content, thus facilitating them in crossing the bridge between theory and practice. Learning nursing care-related skills creates a professionally sound and competent nurse who can provide quality care to individuals who are in dire need of support and care. In the growing world of Nursing Education, Simulation is becoming significant, as it serves to prepare nursing students to render excellent patient care outcomes².

The significance of carrying out this review was to strengthen the practical aspects of teaching and learning by obtaining knowledge and skills

through simulation. SBE supports faculty members in preparing student nurses in a way that they can perform skills on their patients after effective practice efforts in a simulation environment. It allows them to build proficiencies and capabilities to care for their patients, provide competent care, and enhance their safety, by mastering their skills in a well-found simulated setup.

This review helped in identifying the faculty's thoughts, experiences, and understanding regarding simulation. It provided an insight into best practice guidelines for teaching through simulation-based pedagogies. It also provided some understanding about promoting this valuable teaching methodology. Moreover, this helped in identifying the barriers that obstruct the teaching process and the facilitators that make the teaching-learning process more productive. This can enhance the abilities of the faculty to teach simulation-based nursing education and provide constructive feedback to the students to make them confident enough to deal with various situations in real clinical areas. This is the most essential part of the nursing profession and can enhance the efficacy of the health care structure.

Methodology

To review the literature, a thorough and organized literature search was carried out.

Search Strategy

Relevant databases were identified according to the topic. Some of the commonly used databases for literature-based research include Google Scholar, JSTOR, PubMed, and Scopus. Once it was identified which databases needed to be used, a list of keywords and search terms related to the topic was developed.

The research showed that systematic reviews examined the effect of using the "Patient, Intervention, Comparison, Outcome" (PICO) model as a tool for search strategy in qualitative literature exploration. The purpose of the study was to evaluate the effectiveness of PICO³. The findings suggested that PICO was a useful tool

that has improved search quality and helped to identify relevant articles. Some of the common Keywords included "Simulation-based education", "Simulation-based nursing education", "Faculty perception", "Teaching methodology", "Curriculum development", "Types of simulation", "learning outcomes", "Faculty perspective on simulation", "Barriers of simulation" and "Facilitators of Simulation". Boolean Operators were also used, such as AND, OR, and NOT, for specific and comprehensive searches. Articles were evaluated and read to determine their relevance.

Inclusion Criteria

Articles that are written in the English language, have a perspective regarding SBE, its barriers, and facilitators, and released between 2016 and 2023 are included.

Exclusion Criteria

Studies related to other teaching-learning pedagogies and those that do not involve perspective regarding SBE, its barriers, and facilitators are excluded from the review.

Result

In total, 10,022 papers were researched, out of which, 8,031 articles were removed because of duplication. Then 1,991 were left, out of which, 1,034 articles were removed because their content was not relevant. After that, 957 were left, from which 922 were removed after reading their abstract and finding no relevance to the topic. This information is presented through the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses" (PRISMA) (Figure 1).

Lastly, 35 research papers were selected. A brief about these research papers is included in Table 1 (Table 1).

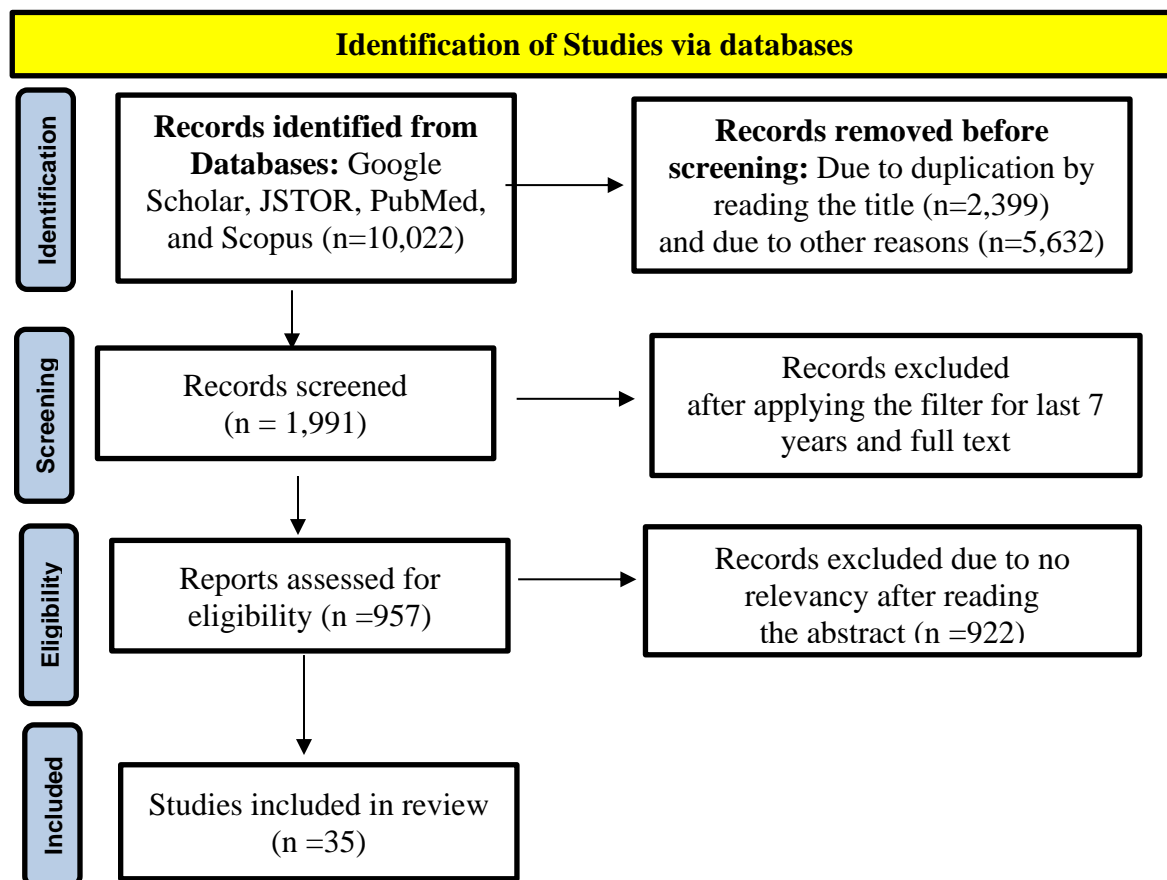


Figure 1: Search Strategy of the study

Table 1: Summary of the Included Studies.

Author(s), Year	Purpose of Study	Study Design	Sample Size	Key Findings
Almotairy et al., 2023	The purpose of this study was to explore faculty perceptions about readiness to integrate simulation into nursing programs.	Cross-sectional correlational study	88 Faculty	Findings suggested that the highest the degree, years of experience in academia, and years of using simulation in teaching were significantly and positively correlated with the overall readiness for SBE.
Alshehri et al., 2023	The study was conducted to explore faculty's perception of using simulation-based teaching as part of the Cardiovascular Diploma Program (CDP) to improve patients' safety. And was aimed to identify the benefits and challenges of utilizing simulation.	Qualitative approach. Semi-structured interviews	10 faculty	Faculty appreciated the role of simulation in improving patients' safety. It gives a risk-free environment for training, gives ideas about basic things of the working environment, identifies gaps between theory and practice. It is recommended that simulation should be integrated into the CDP curriculum.
Asad, 2018	The purpose of this study was to explore nursing students' perceptions about pedagogies implemented in a school of nursing, in Karachi, Pakistan.	Qualitative descriptive exploratory study design	14 Nursing students (7 from 4 th year BScN and 7 from MScN).	The findings suggested that, while shifting from traditional to strategic teaching learning pedagogies, like SBE the barriers are untrained faculty, time constraints, faculty's hectic schedule, lack of institutional and leadership support.
Baayd et al., 2023	The purpose was to identify factors that affect the application of simulation in nursing and midwifery schools.	In-depth individual interviews.	14 simulationists	The findings showed that, for application of SBE stakeholders should be involved, cultural values should be taken care of, it was exciting for students to learn via a new methodology than through the traditional learning method.
Brauneis et al., 2021	The purpose of this study was to explore the impact of use of simulation on the knowledge, confidence, and competence in a pre-licensure graduate pharmacology class.	Quasi-experimental comparison group pre/post-test	44 participants.	Simulation is an effective teaching method for teaching graduate pre-licensure students. It enhanced confidence in safe medication administration and pharmacology knowledge.
Carrero-Planells et al., 2021	To assess the implementation of high-fidelity simulation as a teaching tool for	Mixed-methods study	91 students and faculty	HFS brings students closer to real-life scenarios, bridges the gap between theory and practice,

	fundamental nursing procedures from the perspectives of students and teachers.			and offers students an insight into the healthcare system
Chiu, S. K. 2019	This study transforms experiential learning beyond personal level and ranging students' learning from inside to beyond classroom setting in a cost-effective way.	Auto-ethnography analysed through conversation and qualitative content analysis.	210 students	This study shows that it is possible to apply this approach, it says practice experiential learning and augment students' learning motivation and engagement in other academic domains.
Crowe et al., 2018	The purpose of this study was to investigate the impact of simulation-based education on nursing confidence, knowledge, and patient outcomes in general medicine units.	Pre-post quasi-experimental design	331 nurses.	The study found that simulation-based education led to improvements in nurses' confidence, knowledge, and patient outcomes. Specifically, nurses who participated in the simulation-based training demonstrated higher levels of confidence and knowledge, and their patients had fewer falls and pressure ulcers compared to the control group.
Davitadzeet al., 2022	To investigate the use of Kolb's experiential learning theory in simulation-based learning to enhance participant confidence.	Quasi-experimental design with pre- and post-intervention surveys and simulation-based training sessions.	40 healthcare professionals	The SIMBA program improved the self-reported confidence of participants in various medical specialties. The program was well-received, and the participants appreciated its practical approach and individualized feedback. However, further studies are needed to determine the program's impact on long-term knowledge retention and clinical performance.
Egan et al., 2023	The study compared the efficacy of simulation to clinical practice from the point of view of simulation facilitators, faculty, and students.	Cross sectional study with a mixture of quantitative and qualitative analysis.	Facilitators =40, Faculty=23 and Students =83 Total: 146	A lack of consistency in Simulation based activity is due to lack of preparation for the development and debriefing process. They also found money and time as key challenges to SBE. They said, administration support is also essential.
Eriksen & Frandsen, 2018	To investigate the impact of using PICO as a search strategy tool on literature search quality.	Systematic review.	NA	The review found that using PICO as a search strategy tool can improve the quality of literature searches. The use of PICO was

				associated with a higher number of relevant articles, more efficient searches, and improved search precision. However, there was no consistent evidence that PICO improved search quality.
Findik et al., 2019	The purpose was to determine student nurses' opinions about the low-fidelity simulation method.	Descriptive research	54 nursing students.	The results of the study showed that student nurses believed that LFS was an educational method that improved skills and provided effective learning. Satisfaction levels of the student nurses related to this educational method were high as well.
Guerrero et al., 2022	The goal was to identify and compare the acquired critical thinking skills, satisfaction, and self-confidence of nursing students and staff nurses based on their use of high-fidelity simulation learning.	Quasi-experimental design	30 Nursing students and staff nurses	Findings suggested that both groups had high levels of satisfaction and self-confidence following the HFS learning. Furthermore, the use of HFS enhanced their critical thinking skills and enhanced their retention of learning.
Hanshaw & Dickerson, 2020	The purpose was to explore the evidence of learning outcomes in high-fidelity simulation in undergraduate nursing education.	Literature review	20 research studies	Findings suggested that high-fidelity simulation increased levels of thinking (Bloom's Taxonomy).
Howell, 2017	The purpose of this study was to explore the thoughts and perceptions of nursing faculty about best practice elements for integration of HFS into undergraduate nursing programs	Qualitative Case Study Purposive sampling (Thesis)	22 faculty	The findings highlighted that HFS should be integrated into the nursing curriculum, but efforts should be made to enhance faculty and other assets, to improve its applicability.
Hussain et al., 2019	Purpose was to explore the facilitators of Simulation and Skill Learning in Nursing Education.	Quasi-experimental study design, pre and post educational intervention	133 students	Simulation is a valuable tool to gain knowledge, skills, and self-confidence, which are required to perform effective care in a clinical setting
Kang.H & Kang, 2020	To investigate the effects of simulation-based education on clinical reasoning competence, clinical competence, and educational satisfaction.	The study used a pretest-post-test control group design.	89 3 rd year nursing students.	The study found that simulation-based education significantly improved clinical reasoning competence and clinical competence in the experimental group, compared to the control group. Additionally, participants in the experimental group

				reported higher levels of educational satisfaction than those in the control group.
Karlsaune et al., 2022	Its purpose was to review the historical and pedagogical aspect of simulation and its application in nursing education.	Descriptive study	NA	The findings suggested that simulation has led to more patient safety, a greater scope for nursing action, and best quality of nursing care.
Kolb.A & Kolb, 2018	The purpose of the study was to discuss and highlight the key aspects of the experiential learning cycle for educators.	Conceptual analysis	Not Applicable	Eight important features of the experiential learning cycle were identified, including the need for a balance of concrete experiences, reflective observation, abstract conceptualization, and active experimentation. They also emphasized the importance of feedback, the role of emotions in learning, and the need for learners to be actively engaged in the process.
Koukourikos et al.,2021	To present data related to simulation in nursing education.	Literature review	NA	The findings of the review suggested that simulation facilitated students in practicing skills, boosted their self-esteem, enhanced confidence. Thus, it promoted learning and bridged the gap between theory and practice.
Lee & park,2020	The purpose was to identify the subjectivity of nursing students and instructors about simulation-based learning.	Q-methodology (Subjective views, Qualitative and Quantitative both).	46 nursing students and 38 instructors	The findings suggested that SBE was an effective educational method that improved students' nursing competence, skills, knowledge, learning motivation, improved students' critical thinking and problem-solving skills.
Logan et al., 2021(32)	The purpose of the study was to develop an e-learning module to improve student learning and outcomes in nursing education.	Descriptive design	Not Applicable	E-learning module for nursing education was developed and was evaluated for its effectiveness. The module was found to be effective in improving student learning outcomes and increasing engagement. The authors suggested that e-learning modules can be a valuable addition to traditional teaching methods in nursing education.

Luo et al., 2021	To explore Nurse educator's perceptions about simulation teaching, its benefits and barriers.	Cross-sectional descriptive study	136 Nurse educators	Findings suggested that nurse educators should be trained to enhance their competencies.
Masooth & Ahamed, 2023	The purpose of this review was to highlight the impact of simulation on nursing education.	Review article	NA	The findings proposed that, simulation was significant as it developed more skilful nurses. It helped to develop all types of learning including the cognitive, affective and psychomotor domain.
Meum et al., 2020	This review aimed to understand how, why, and in what circumstances the use of simulation affected learning as part of the bachelor's program in nursing.	Realist review	NA	The findings suggested using SBL as an integrated part of the Bachelor of Nursing program, as it helps enhance students learning.
Morris, 2020	The purpose of this study was to conduct a systematic review and a revision of Kolb's experiential learning model, to better inform educational practice.	Systematic review.	NA	The study found that while Kolb's experiential learning model remains relevant, it requires revision to incorporate new research and developments in educational theory. The author proposed a revised model that includes more emphasis on the social and cultural context of learning and the role of emotion in learning.
Mukhtar et al., 2020	This study explored the perceptions of teachers and students regarding online learning during the COVID-19 pandemic, its advantages, limitations, and recommendations for use in the institutions in Pakistan	Qualitative case study	12 faculty members and 12 students	The findings suggested that online learning modalities encourage student-centered learning, and they were easily manageable during the lockdown situation.
Piryani et al., 2019	The objective of this study was to evaluate the perceptions of participants about SBE and an SBE workshop.	Semi structured pre-test and post-test questionnaires	20 faculty 17 filled consent and participated	All participants mentioned that integration of SBE was important to build one's professional capacity, resulting in better quality of medical care through better learning opportunities.
Rattani et al., 2020	The aim of this study was to measure the effectiveness of HFS to teach end of life care in a palliative course in the	Quasi-experimental design with	42 nursing students	The findings showed that students improved their attitudes towards providing care, they were

	undergraduate nursing program.	pre and post-test		able to handle their emotions through HFS.
Ritter et al., 2023	The purpose of this study was to identify the effect of level of simulation fidelity on learning, on a target task.	Synthetic analysis	NA	The results suggested that lower fidelity simulation training can lead to faster training, but it would depend upon what and how it is taught.
Saleem & Khan, 2023	The main objective of this paper was to use existing literature to explore aspects of simulation in healthcare teaching	Literature review	39 articles	It supported the idea that simulation is an effective way of learning in healthcare.
Salifu et al., 2023	The study explored and described the experiences and perceptions of nursing students and post-registration nurses in the teaching and learning of clinical competence in Ghana, a low-resource setting.	Sequential multimethod design with 4 research designs (scoping review, qualitative descriptive study, narrative synthesis, and nominal group discussions FGD)	FGDs of 15 post-registration diploma nurses and 40 nursing students semi-structured interviews with nine nurse educators	SBE can be adapted in low resource settings as well with the support of leaders.
Shah et al., 2019	The purpose of this study was to review the current literature on simulation-based education and team training in the field of otolaryngology.	Literature review.	NA	The authors found that simulation-based education and team training had been shown to improve clinical and non-technical skills, team communication, and patient outcomes in the field of otolaryngology. They also identified the need for further research to explore the optimal design and implementation of simulation-based training programs.
Thompson, 2021	The purpose was to identify the effects of high-fidelity simulation, low-fidelity simulation, and video training on nursing student anxiety in the clinical setting.	Quasi-experimental Design	44 Nursing Students	The findings suggested a connection between simulation, anxiety, and clinical experiences for first-year nursing students. Anxiety may influence performance in the clinical setting; it is expected that

Younas et al., 2020	The purpose was to explore nurse educators' perspectives about clinical and academic teaching, and to determine their challenges.	Sequential exploratory mixed-methods study. purposive sample	12 educators interviewed and 112-surveyed	lowering anxiety would be beneficial to students when performing skills in the clinical setting that affect patient safety. Findings suggested that educators, experience, workload, time constraints, inappropriate educator to student ratio; underdeveloped curriculum; inadequate resources; inadequate clinical teaching settings for skills and simulation labs; inadequate professional development opportunities; lack of autonomous decision making; lack of educational, management and research support from the regulatory bodies; and lack of educational research are challenges for SBE.
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Discussion

Simulation is a teaching-learning methodology that engages learners in a simulated experience that is designed to replicate real clinical circumstances in a safe and controlled environment. The goal is to get the learners engaged in these scenarios and make them learn, before dealing with real patients.

Simulation-Based Education (SBE) has a great influence on the confidence and knowledge of nurses, and patient care outcomes. It has facilitated in several ways, including teaching skills, allowing nurses to practice scenarios that they do not encounter frequently, and providing a safe environment to learn². A study was conducted in South Korea, on a sample size of n=89, third-year nursing students. This study evaluated the effectiveness of SBE on clinical reasoning competence, clinical competence, and educational satisfaction. The findings suggested that SBE could improve all three. The goal of SBE was to provide learners with hands-on experience. By doing so, learners developed competency in the skills and knowledge that they

needed to perform effectively in real-world situations^{3,4}.

Simulation-Based Education (SBE) through team training has improved clinical outcomes, reduced errors, and enhanced teamwork. Through this approach, learners were permitted to practice and develop their skills in a realistic, safe environment, without the risk of consequences. They received feedback on their performance, which could support them to improve their practices⁵.

Types of Simulation

Simulation is a pedagogy that creates a real situation, in a safe environment, to analyze, understand, and predict behaviors and consequences. There are different types of simulation that vary in their fidelity or level of application.

Low-Fidelity Simulation

Low-fidelity simulation (LFS) is a type of simulation that facilitates learners to enhance their knowledge and practices in a less real scenario than in a high-fidelity simulation. Moreover, LFS is a useful approach that takes less

time to be performed. This allows the learner to repetitively practice the simulated scenario, making them more perfect. LFS is also less complex, so it gives minimal cognitive burden. Hence, participants with limited experience can also get engaged with LFS⁶. A study using a Quasi-experimental design, explored the effectiveness of LFS in enhancing confidence and knowledge, in a pharmacology course of pre-licensure nursing students, n=44. The results showed that the participant's knowledge and confidence increased by using LFS⁷.

Low-fidelity simulation is an approach that enhances skills and promotes active learning in nursing students. They feel satisfied with this educational methodology. Through this, the students believed that they could enhance their competencies⁸.

High-Fidelity Simulation

High-fidelity simulation (HFS) provides exposure to a near-to-real scenario, to practice and enhance individual competencies in a well-equipped, simulated environment. HFS has positive effects, as it enhances the level of thinking in nursing students, and generates higher-order thinking⁹. Using a Quasi-experimental design, the research identified and compared the efficiency of HFS learning on n=30 nursing staff and students. The findings reported that both groups showed high levels of satisfaction, confidence, and enhanced critical thinking and knowledge retention¹⁰.

High-fidelity simulation has been shown to lower anxiety in nursing students. As anxiety is the biggest cause of error in clinical settings, simulation-based approaches could allow students to practice skills in a safe environment and make them competent enough to mitigate errors in clinical settings, like medication errors¹¹.

Application of Simulation

Simulation has become an increasingly popular teaching-learning pedagogy in nursing education, due to its ability to provide a safe and controlled learning environment, where students

can polish their skills. The research aimed to understand how SBL affects the learning process of nursing students. A systematic review was conducted, and the findings proposed that SBL should be an integral part of the bachelor's program in nursing, as it positively affects learning¹².

Simulation has been widely adopted in the global context as a means of enhancing student learning and engagement. In the USA, e-learning simulation in nursing education helped the students in involved with the content and enhanced their self-learning, regarding pediatric simulation¹³.

In the Asian context, it was found that SBE was well implemented, and it gave a wide range of benefits to nursing education and practices. However, for the application of SBE, it was suggested that stakeholders should be involved, and cultural values should be incorporated. The students were found to be more excited to learn via this new methodology than with traditional learning¹⁴.

A Study in Korea showed the changes that faculty members observed in their students after SBE. The purpose of this study was to find out the views of nursing students and faculty about SBL. Using the Q-methodology, nursing students, n=46, and instructors, n=38 were involved. The results suggested that SBE was an effective educational methodology that improved students' competence, skills, knowledge, motivation, critical thinking, and problem-solving skills. These were some of the obvious characteristics that they found in their students¹⁵. The application of simulation in the Pakistani context has been gaining attention from researchers and educators in recent years. Moreover, a Quasi-experimental study design, with pre and post-tests was aimed to measure the effectiveness of HFS in teaching end-of-life care in a palliative course, in the undergraduate nursing program at the Aga Khan University, School of Nursing and Midwifery Karachi, Pakistan. The sample size was n=42 nursing students. The findings showed that students'

attitudes towards providing care improved and that they were also able to handle their emotions, using HFS¹⁶.

Additionally, a literature review stated that, in Pakistan, simulation was an essential component of education, which has flourished in the last couple of years and was highly acknowledged by the teachers as a way to advance skills and knowledge in healthcare that can lead to better patient care outcomes¹⁷.

Scope and Significance of Simulation-based Education in Nursing

A quote by Confucius states "I hear, and I forget, I see, and I remember, I do, and I understand". SBE has become highly significant in nursing because it has facilitated student nurses to cross the bridge between theory and practice. Nursing students were facing a lot of problems in practicing theoretical concepts in clinical settings; however, simulation has facilitated their learning, and they can now practice skills in a safe environment, which has boosted their confidence, and self-esteem, and polished their clinical skills and decision-making power. Thus, learning is promoted¹⁸.

A descriptive study stated that simulation substantially groomed nursing students' critical thinking and decision-making skills. It facilitated the creation of a secure environment for patients and helped reduce the chances of errors. It made nursing practices more effective, leading to better healthcare outcomes. Moreover, simulation promoted an adult learning approach, as it allowed participation actively, which stimulated the learning process and attained better learning outcomes¹⁹.

A review paper highlighted the scope of simulation in nursing education, stating that simulation has provided a real environment for nurses to practice and enhance their skills. Moreover, it has provided a platform for nurses where they can polish all domains of learning including the cognitive, affective (attitude, behavior, emotions), and psychomotor domains.

It has developed confidence in nurses to work effectively in healthcare settings²⁰.

Perspectives of Nursing Faculty

Simulation-based education has been increasingly adopted by nursing educator's worldwide²¹. According to faculty members, SBE is a very effective pedagogy to polish different skills in students. It is an effective way to enhance clinical skills and decision-making, in a safe and organized environment.

Global Perspective

Across the world, simulation is an effective methodology that incorporates theory into practice and leads to better student outcomes. A comparison was carried out, through a Cross-sectional mixed-method study, to identify the efficacy of simulation in clinical practice, from the perspective of faculty, simulation facilitators, and students. The findings showed that the knowledge and skills of faculty and facilitators had a great impact on students' learning and if they were well trained, they could develop that expertise in their students as well²².

A Qualitative case study was conducted in the USA that highlighted the perspective of nursing faculty members. The purpose of this study was to explore the thoughts and perceptions of nursing faculty regarding the integration of HFS in undergraduate nursing programs. The participants were n=22 Nursing Faculty. The findings suggested that HFS should be integrated into the nursing curriculum, and efforts should also be made to improve its applicability by enhancing faculty capability and through the provision of other assets. The faculty highlighted that they felt that they were supposed to learn simulation by themselves. However, they reported that they needed ample time to develop, plan, and deliver SBL. Furthermore, administration support was vital for making SBE successful²².

Asian Perspective

In the Asian context, the perspectives of nursing faculty, regarding their readiness to integrate SBE in the nursing programs, were explored in one

study. Their perceptions depicted that integration of SBE depended upon the higher degrees of faculty members, years of experience, and years of using simulation in teaching practices. Furthermore, they suggested some factors that need to be incorporated, in SBE; these included understanding the need for simulation, institutional support, sustainability of this practice through the development of culture, enough time, faculty and resources, readiness, and availability²³. Another study conducted in Nepal highlighted the perceptions of nursing faculty on SBE. This was evaluated through a workshop. A semi-structured pretest and posttest questionnaire was used, that had Likert scales and open-ended questions. The total number of participants was n=20, but 17 filled out the consent and participated. All participants mentioned that integration of SBE in nursing was significant to develop professional capacity, which could result in better quality of care²⁴.

Pakistani Perspective

There are very few studies that have highlighted the perspectives of nursing faculty in the Pakistani context.

In the era of the pandemic, the nursing faculty highlighted that online studies simulation could be the best methodology to equip nursing students virtually, through online simulated patients, or role plays that could help them learn about history taking, clinical reasoning, and communication techniques²⁵. An exploratory mixed-method study was conducted, at twelve nursing institutes, in five cities of Pakistan. This study explored the perspectives of nurse educators about clinical and academic teaching and its challenges. They took a sample of 124 educators. The study findings suggested that the educators faced several challenges. These included excessive workload, time constraints, inadequate student-faculty ratio, underdeveloped curriculum, insufficient resources, lack of clinical teaching space for skills and simulation labs, and professional development was not encouraged. They also

reported a lack of autonomous decision-making and educational research²⁶.

Barriers to Simulation-Based Education

SBE is an effective teaching strategy in nursing education. However, there are several barriers that prevent its widespread adoption and implementation in different contexts.

Global Perspective

Nurse educators face many barriers regarding simulation-based teaching. They are not well-trained to facilitate SBE sessions. They should be educated theoretically and practically as well so that they can support and teach their students appropriately. Other barriers that they reported were lack of resources and lack of preparation in students²⁷. A Qualitative case study was conducted in the USA, which highlighted the perspective of the nursing faculty members. The purpose of this study was to explore the thoughts and perceptions of nursing faculty regarding the integration of HFS and its related barriers in undergraduate nursing programs, n=22 nursing faculty participated in this study. The findings highlighted some barriers, which included time to plan and execute SBE, untrained faculty, financial constraints, and lack of space for student practice. Moreover, the faculty personally felt uncomfortable, and sometimes they felt this was a learning experience for them as well²².

Asian Perspective

In the Asian context, the perspectives of the nursing faculty, regarding the barriers to integrating simulation in the teaching process, included untrained faculty, infrastructure issues, lack of equipment, and lack of organizational and stakeholder support to implement programs. They highlighted some of the above issues as the biggest obstacles in the integration of simulation in nursing education²³. A Cross-sectional descriptive study was conducted in China with n=136 nurse educators. This study explored the perceptions of nurse educators toward simulation-based teaching. Through this study, they highlighted several barriers, like, lack of faculty team building for simulation, lack of

professional capacity in faculty, lack of preparedness and motivation in students, lack of experience and knowledge of faculty, lack of faculty development opportunities, and time constraints²⁷.

Pakistani Perspective

Very few studies were found in the Pakistani context regarding barriers to the use of simulation in nursing. Some of them are discussed below.

According to the nursing faculty members, there were plenty of challenges at the level of Pakistan, as well. These included unstructured policies that could hinder the improvement of the teaching-learning process. Moreover, the heavy workload of the faculty, lack of space, and untrained faculty members were also highlighted as barriers²⁶. Furthermore, a Qualitative descriptive exploratory study was conducted, that explored the perceptions of nursing students about the pedagogies implemented in nursing schools in Karachi, Pakistan. It was conducted with 14 Nursing students (seven from 4th year BScN and seven from the MScN program). The findings suggested that while shifting from traditional to strategic teaching-learning pedagogies, like SBE, the barriers were untrained faculty, time constraints, faculty's hectic schedule, and lack of institutional and leadership support²⁸.

Impact of Facilitators

SBE helps nursing faculty to develop better teaching practices; it provides a safe environment to practice and learn. Some of the key facilitators of SBE in nursing include the availability of simulation resources and techniques, faculty training on the use of simulation, adequate preparation and support for faculty, and the presence of a knowledgeable facilitator. Additionally, having an effective assessment and evaluation system in place was essential for ensuring the success of SBE.

Global Perspective

Simulation-based education has a great impact on nurses. It has improved nurses' confidence and knowledge, which facilitates them to work

efficiently in health care settings, which can eventually lead to the best patient care outcomes. A study showed that these impacts were sustainable for a long time². Furthermore, a Mixed-method study was conducted in Spain that assessed the implementation of HFS as a teaching tool for fundamental nursing procedures and highlighted the perspectives of students and teachers related to the impact of HFS. It was conducted with n=91 students and faculty. The results of the study showed some impacts of the facilitators of HFS. It brought students closer to real-life scenarios, bridged the gap between theory and practice, developed insight, helped to communicate therapeutically, and developed emotional and ethical relationships with patients²⁹.

Asian Perspective

In the Asian context, while digging out the perceptions of faculty members using SBE, they highlighted that they appreciated that simulation helped in improving patients' safety, as it gave a risk-free environment to practice. It portrayed the working environment and identified the gaps between theory and practice³⁰. Another study identified the impact of facilitators of simulation in nursing and midwifery schools. In-depth individual interviews were carried out, with 14 simulationists. The findings showed that SBE had a great impact on learners and helped deliver better outcomes. Furthermore, students were found to be excited to learn via the new methodology, which meant that it had gained students' interest as well¹⁴.

Pakistani Perspective

Very few studies were found in the Pakistani context. One study explored the facilitators of simulation and skill learning in nursing education. A Quasi-experimental design was used, with pre and post-intervention. The sample size was n=133 students. The findings depicted that simulation had a great impact on nurses, it is a valued tool for gaining knowledge, skills, competency, and confidence, which are essential for performing in clinical settings³¹.

Simulation has been an effective teaching-learning pedagogy for nurses. It is a technology through which nurses can learn and practice more efficiently. In all parts of the world, it has some barriers and facilitators that support or hinder this learning method. Efficient work should be done to make the nursing faculty more capable in the domain of simulation-based education so that they can prepare competent students^{32, 33}.

The limitation of this review was that many of the articles found in the search, were not available in full text so they were not included in the review. They may have more relevant information regarding simulation, its barriers, and facilitators.

Conclusion

Simulation in nursing education involves the use of simulated scenarios that replicate real-life situations and create effective learning experiences. Through simulation, students can practice and become competent in nursing skills. They can enhance their critical thinking, decision-making, teamwork, communication skills, and confidence. Through simulation, immediate feedback can be received, to reduce the chances of error.

Simulations could range from simple to complex experiences. Faculty members have observed drastic changes in students when they were exposed to SBE. Although there are many barriers that make the approach difficult, faculty members are devoted to making their best efforts for their students, as their main goal is to enhance learning that will lead to the best patient outcomes.

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